Effect of herbal lysine supplement on broiler poultry bird performance

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ABSTRACT

The herbal composition containing natural source of lysine was examined to assess its efficacy in terms of growth, haemato-biochemical, pathological and carcass quality attributes. Seventy five healthy day old broiler poultry chicks of nearly similar live body weight were equally divided into three groups, comprising twenty five chicks each. Group-I was positive control fed with the basal diet without any natural or synthetic source of lysine. Group-II was fed with basal diet supplemented with herbal formulation containing natural sources of lysine (AV/NLP/18) @ 1Kg/tonne of feed (supplied by M/S Ayurvet Ltd., Baddi, H.P., India). Group-III was fed with basal diet supplemented with synthetic lysine (1kg/tonne). At the end of sixth week, significantly higher live body weight (915.69, 1767.24 and 1754.24gm) with more economical FCR (2.30, 1.92 and 1.90), carcass yield (499.42, 1158.69 and 1124.00gm) along with marked improvement in digestibility of nutrients from supplementation of herbal lysine with equal competence as that of synthetic lysine was observed. More satisfactory results were observed among total serum protein (3.24, 4.01 and 4.36gm/dl), serum albumin (1.52, 1.85 and 2.01gm/dl), serum globulin (1.73, 2.16 and 2.35gm/dl) with lesser but within range values of serum cholesterol (142.62, 113.38 and 123.78mg/dl) and triglycerides (183.29, 154.44 and 136.65mg/dl) along with significantly lower SGPT (20.65, 16.64 and 17.14 U/I) and SGOT (162.65, 134.69 and 136.59 U/I) values showing normal satisfactory liver function from supplementation of herbal as well as synthetic lysine as compare to control group. This trend also supported with normal haematological parameters (Haemoglobin, PCV percent, TEC, TLC and DLC) in group supplemented with herbal as well as synthetic lysine which were statistically significant from control group. The treatment group supplemented with herbal lysine has shown better serum immunoglobulin level with marked improvement in resistance power. The gross, physiological and pathological observations of visceral organs (Liver, Kidney, Spleen and Bursa) supplemented with herbal and synthetic lysine have shown completely normal, within range and satisfactory results as compare to control group. Stunted growth, reduced feed intake, irrelevant appetite along with nervous symptoms, leg weakness, paralysis of legs and wings, falling towards back and necrotic, haemorrhagic lesions with fatty changes in visceral organs were observed in control group. While group supplemented with herbal or synthetic lysine were devoid of such lesions and completely normal. Herbal lysine product (AV/NLP/18) was found to improve growth rate, FCR, dressing percentage as well as normalization of haemato biochemical and immunological results with equal competence to synthetic lysine and this may be attributed to the activity of key constituent herbs namely Mucuna pruriens, Allium sativum, Trigonella foenum graecum & many more

Keywords: Herbal lysine, Mucuna pruriens, amino acid, FCR

1. INTRODUCTION

Lysine is usually second limiting amino acid in the diets based on maize and soybean meal (Baker, 1997). One cause of lysine deficiency is the fact that large amounts of vegetable protein supplements are now used in feeds, plus low levels of animal and fish proteins. It is more economical to add lysine than more soybean meal or other natural protein to meet the requirement. Lysine, an indispensable amino acid, must be supplied in the diet of the chicken, as the poultry birds are unable to synthesize it in the amounts necessary to sustain life and growth (Munks et al. 1945). In poultry ration, along with the vitamins and minerals, proteins have been playing critical role in development of musculature. Lysine assists in the absorption of calcium. Lysine aids in the production of antibodies, hormones and enzymes (Florini et al. 1996). Lysine has been proven effective for Herpes, as it reduces viral growth. Lysine and Vitamin C together form Carnitine, which enables muscle tissue to utilize oxygen more efficiently.

2. SCOPE OF THE STUDY

The present study was conducted to evaluate efficacy of polyherbal coded formulation AV/NLP/18 (supplied by M/S. Ayurvet Limited, Baddi, India) in comparison to synthetic Lysine in improving overall growth, productivity and performance in broiler poultry birds.

2.1. Materials

The materials used included the AV/NLP/18 (supplied by M/S. Ayurvet Limited, Baddi, India), and synthetic lysine.

2.2. Methodology

Seventy five healthy day old broiler poultry chicks of nearly similar live body weight were equally divided into three groups, comprising twenty five chicks each. Group-I was positive control fed with the basal diet without any natural or synthetic source of lysine. Group-II was fed with basal diet supplemented with herbal formulation containing natural sources of lysine (AV/NLP/18) @ 1Kg/tonne of feed (supplied by M/S Ayurvet Ltd., Baddi, H.P., India). Group-III was fed with basal diet supplemented with synthetic lysine (1kg/tonne). All the three groups were housed separately and maintained on adlibitum broiler starter and finisher
ration and clean drinking water throughout the experiment. Measured quantity of feed was fed to chicks every day and the feed in balance was recorded after 24 hrs. Mean live body weight (gm/chick/week) was computed at weekly intervals from 1st week to 6th week of study. Periodical blood samples were collected from the experimental birds for haematological and biochemical studies. At the end of the experiment histopathological and carcass traits were also studied. Various parameters were recorded weekly and were statistically analyzed as per (Snedecor and Cochran, 1994) at the end of sixth week. The results were assessed with respect to effect on growth, feed efficiency, carcass traits, serum biochemical, haematological gross and histopathological studies.

3. RESULTS

Growth and carcass studies: Significantly higher live body weight (915.69, 1767.24 and 1754.24gm) with more economical FCR (2.30, 1.92 and 1.90), carcass yield (499.42, 1158.69 and 1124.00gm) along with marked improvement in digestibility of nutrients from supplementation of herbal lysine with equal competence as that of synthetic lysine was observed (Table 1).

Serum Biochemical studies: More satisfactory results were observed among total serum protein (3.24, 4.01 and 4.36gm/dl), serum albumin (1.52, 1.85 and 2.01gm/dl), serum globulin (1.73, 2.16 and 2.35gm/dl) with lesser but within range values of serum cholesterol (142.62, 118.38 and 123.78mg/dl) and triglycerides (183.29, 154.44 and 136.65mg/dl) along with significantly lower SGPT (20.6, 16.64 and 17.14 U/l) and SGOT (162.65, 134.69 and 136.59 U/l) values showing normal satisfactory liver function from supplementation of herbal as well as synthetic lysine as compared to control group.

Haematological studies: Among haematological parameters, Haemoglobin content of treated groups were found significantly higher as compared to control. However, no significant variation was found in PCV percent, TEC, TLC and DLC in all the three experimental group (Igbasan et al., 2012).

Gross and histo-pathological studies: The gross, physiological and pathological observations of visceral organs (Liver, Kidney, Spleen and Bursa) supplemented with herbal and synthetic lysine have shown completely normal, within range and satisfactory results as compared to control group. Stunted growth, reduced feed intake, irrelevant appetite along with nervous symptoms, leg weakness, paralysis of legs and wings, falling towards back and necrotic, haemorrhagic lesions with fatty changes in visceral organs were observed in control group. While group supplemented with herbal or synthetic lysine were devoid of such lesions and completely normal.

4. DISCUSSION

Chattopadhyay et al. (2006) and Kalbande et al. (2009) observed the similar results in terms of growth and carcass studies after supplementation of herbal lysine in the basal diet of broilers. The natural sources of lysine can equally compete with synthetic sources for achieving the optimum targets with regards to growth and carcass traits. Mucuna pruriens along with other key component being rich source of lysine can meet the requirement of essential amino acid in broiler diet. Haider and Roy (2007) and Kalbande et al. (2009) recorded the observations in concordance with the present study with significant difference in serum biochemical parameters as reduced values of serum protein, albumin and globulin while increased level of cholesterol, triglyceride, SGPT and SGOT.

5. CONCLUSION

Herbal lysine product (AV/NLP/18) was found to improve growth rate, FCR, dressing percentage as well as normalization of haematobiochemical and immunological results with equal competence to synthetic lysine and this may be attributed to the activity of key constituent herbs namely Mucuna pruriens, Allium sativum, Trigonella foenum graecum & many more.

SUMMARY OF RESEARCH

1. This work has provided an insight on how the herbal lysine supplementation to broiler poultry birds helped to enhance the productive performances without causing any harm.

2. The present research has provided an opportunity to highlight the importance of herbal supplementation in broiler poultry ration.

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